

## Self-report of cognitive concerns in people with lower limb loss

### Background:

Loss of a limb has traditionally been viewed as a musculoskeletal condition. However, lower limb loss (LLL) has also been associated with presence of cognitive impairment.<sup>1</sup> One limitation to prior studies is that studied participants were primarily persons with comorbid dysvascular conditions (e.g., diabetes) and rarely included persons with amputation from traumatic etiology. As such, differences in CI among people with different etiologies of amputation are unknown. Further, prior research most often assessed cognitive difficulties from the perspective of health care providers, rather than people with LLL themselves.<sup>1</sup>

### Aim:

To estimate the prevalence and severity of cognitive concerns in persons with LLL by comparing self-reported cognitive difficulties to normative scores. Presence of cognitive concerns by etiology was also examined to assess the relationship between etiology and cognition.

### Method:

Adult prosthetic limb users with unilateral LLL from dysvascular or traumatic causes were recruited to participate in a cross-sectional study. Each participant completed a one-time paper or electronic survey that included the NeuroQoL Applied Cognition General Concerns (NeuroQoL AC-GC) instrument.<sup>2</sup> NeuroQoL AC-GC is an 8-item survey that measures perceived difficulties with cognitive processes (e.g., memory). NeuroQoL scores were compared to normative sample scores (i.e., a T-Score of 50) using one-sample t-tests. Data were then compared by etiology using t-tests to assess differences between groups. The threshold for significance was set at 0.05.

### Results:

Participants (n=1086) were an average of 55 (SD=13) years old. The majority were male (71%) and had at least a high school education (70%). Over half of the sample had amputation from traumatic causes (55%) and most had an amputation at the transtibial level (65%). On average, participants' most recent amputation occurred 12 (SD=14) years prior.

People with LLL reported significantly more difficulties with cognition than the normative sample ( $p<0.001$ ). Subgroups defined by age and etiology had significantly different NeuroQoL AC-GC scores from the normative sample (both  $p<0.001$ ), but not significantly different from each other ( $p>0.05$ ).

### Discussion & Conclusion:

Overall, people with LLL report concerns with cognitive function. NeuroQoL AC-GC scores are approximately 0.4 SD lower in people with LLL compared to a normative sample based on the U.S. general population. One-half SD has been demonstrated as an acceptable estimate for meaningful difference across outcome measures.<sup>3</sup> Additionally, people with LLL from dysvascular causes report similar difficulties with cognition than do those with amputation from traumatic etiology. This result may indicate that concerns with cognitive function are not solely associated with dysvascular comorbidities, but are common to many people with LLL.

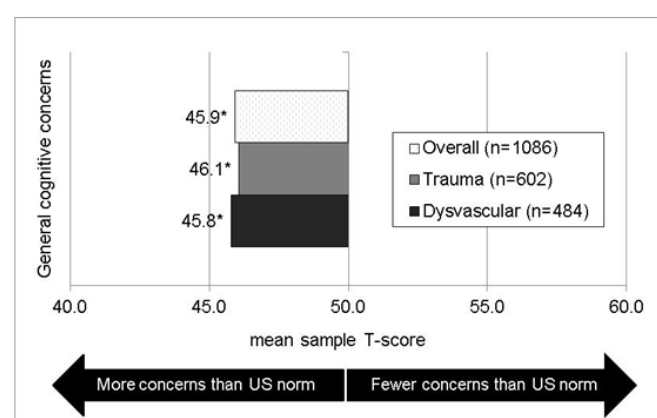


Figure 1. Mean Neuro-QoL AC-GC T-scores for individuals with lower limb loss, overall and by etiology. The T-score of 50 represents the normative sample mean.

**References:**

1. Coffey, L. Disabil & Rehab. 34(23), 1950-64, 2012.
2. Cella, D. Neurology. 78, 1860-67, 2012.
3. Norman, G.R. Medical Care. 41(5), 582-92, 2003.